

IN THE SPECIFICATION

Please amend the following paragraphs of the Specification as indicated below:

[0009] The present invention provides a steering linkage assembly in which a tie rod and a drag link are connected to a steering knuckle in an over/under arrangement, with first and second ball joints for the drag link and the tie rod respectively on opposite sides of the steering knuckle and having a common axis that is located within an interior volume of a wheel supported by the steering knuckle. The coaxial, over/under configuration results in a ball joint assembly having a minimum axial dimension so that both ball joints can be located inside the inner rim of the wheel, and hence as far outboard and as far forward as possible. The extreme outboard placement of the drag link ball joint maximizes the length of the drag link to reduce bump and roll steer sensitivity, and the forward placement maximizes the effective steering arm radius and reduces steering linkage loads while also improving packaging.

[0010] The invention further provides a ball joint unit for use in a motor vehicle steering linkage comprising a first steering link socket, a second steering link socket, a steering knuckle for supporting a wheel and having a generally vertical through hole, and a stud passing through the through hole in the steering knuckle. The stud comprises a first ball portion disposed at a first end of the stud above the steering knuckle and received in said first socket for pivotal movement of said first link relative to said first ball portion, and a second ball portion disposed at an opposite second end of the stud below the steering

knuckle and received in said second socket for pivotal movement of said second link relative to said second ball portion.

[0020] Drag link 24 and tie rod 22 are connected to steering knuckle 12 in an over/under configuration by means of a steering linkage ball joint unit 28. As best seen in FIG. 4, ball joint unit 28 comprises an upper stud part 30a and a lower stud part 30b and that extends through a hole in steering arm 20 and ~~has~~ have first and second ball joints 34,36 disposed above and below the steering arm 20 respectively, a drag link socket 24a pivotingly engaging the first ball joint, and a tie rod socket 22a pivotingly engaging the second ball joint. The first and second ball joints 34,36 define a link attachment axis 38 that may be oriented vertically or may be inclined somewhat from vertical, depending on the desired suspension geometry.

[0022] The axial dimension **A** of ball joint unit 28 is preferably kept to a minimum so that the ball joint unit may be located as far forward within the wheel interior volume 40 as is possible without causing physical interference between the ball joint unit and the wheel rim 18a. Ball joint unit 28 is preferably located as far forward of the kingpin axis 14 as possible in order to maximize the effective steering arm radius, reduce steering linkage forces, and ~~improving package to~~ minimize bends/offsets in the linkage.

[0023] The ability to locate ball joint unit 28 as far forward as possible is also aided by ~~plaeing the center point of-~~ if the axial dimension **A** is distributed evenly above and below ~~in alignment with~~ a horizontal reference line **H** passing through the axis of rotation of wheel 18. Assuming, for example, that the drag link

socket/first ball joint combination and the tie rod/second ball joint combination have identical overall axial dimensions, the steering arm 20 would lie directly on the ~~horizontal~~ reference line H, as is shown in Fig. 3.

[0028] This problem is solved by the use of the convergent/divergent, double taper geometry of the through hole tapered surfaces 41a,41b and stud shanks 42a,44c. This inventive design allows the required engagement lengths of the upper and lower ball joint studs to effectively overlap one another, which results in a significant reduction in the axial package envelope and enables the double ball joint to package within the wheel in an optimal manner.

[0029] Fig. 5 depicts a second embodiment of a ball joint unit 128 in which upper stud part shank 142 has a conical shank portion 142a and a cylindrical shaft 142b with a female threaded hole 142c formed in its lower end. Lower stud part shank 144 comprises a conical shank portion 144a and an axial hole 144b extends therethrough ~~the entire~~. Upper stud part shank 142 extends through the through hole in the steering knuckle 20 and into the axial hole 144b. A male threaded fastener 146 is inserted into the axial hole 144b from the bottom end and engages the female threaded hole 142c in shank 142 to secure the first and second stud parts to one another. The lower end of the axial hole 144b may be of an enlarged diameter to provide clearance for the head of male fastener 146.